JUL/FY06

WATERVLIET ARSENAL
New York

Army Defense Environmental Restoration Program Installation Action Plan

FINAL 29 August 2006

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Statement of Purpose

The purpose of the Installation Action Plan (IAP) is to outline the total multi-year Cleanup Program for an installation. The plan identifies environmental cleanup requirements at each site or area of concern, and proposes a comprehensive, installation-wide approach, with associated costs and schedules, to conduct investigations, necessary remedial actions, and long term maintenance.

In an effort to coordinate planning information between the restoration manager, US Army Environmental Center (USAEC), Watervliet Arsenal, executing agencies, and regulatory agencies, an IAP was completed. The IAP is used to track requirements, schedules and tentative budgets for all Army installation cleanup programs.

All site-specific funding and schedule information has been prepared according to projected overall Army funding levels and is, therefore, subject to change.

The following agencies contributed to the formulation and completion of this Installation Action Plan:

Company/Installation/Branch
Watervliet Arsenal

Engineering and Environment, Inc. for USAEC

Malcolm Pirnie, Inc.

US Army Corps of Engineers – Baltimore District

Acronyms & Abbreviations

AEDB-R	Army Environmental Database - Restoration
AST	Aboveground Storage Tank
CA	Corrective Action
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CMI(C)	Corrective Measures Implementation (Construction)
CMI(O)	Corrective Measures Implementation (Operation)
CMS	Corrective Management Study
CRP	Community Relations Plan
CS	Corrective Study
CTC	Cost-to-Complete
cy	Cubic Yards
DD	Decision Document
DERP	Defense Environmental Restoration Program (now ER,A)
DES	Design
DNAPL	Dense Non-Aqueous Phase Liquid
EI	Environmental Indicators
FS	Feasibility Study
FY	Fiscal Year
GPRA	Government Performance and Results Act
GW	Groundwater
IAP	Installation Action Plan
IRA	Interim Remedial Action
IRP	Installation Restoration Program
K	thousand
LNAPL	Light Non-Aqueous Phase Liquid
LTM	Long-term Monitoring
LUC	Land Use Control
MMA	Main Manufacturing Area
MMRP	Military Munitions Response Program
MNA	Monitoring Natural Attenuation
MW	Monitoring Well
NFA	No Further Action
NPL	National Priorities List
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
ORC	Oxygen Release Compound
PAH	Polycyclic Aromatic Hydrocarbons
POL	Petroleum, Oil, Lubricants
PY	Prior Year
RA	Remedial Action
RAB	Restoration Advisory Board
RC	Response Complete
RCRA	Resource Conservation and Recovery Act
REM	Removal
RFA	RCRA Facility Agreement

Acronyms & Abbreviations

RI	Remedial Investigation
RIP	Remedy-in-Place
RFI	RCRA Facility Investigation
ROD	Record of Decision
RRSE	Relative Risk Site Evaluation
S&A	Supervision and Administration
S&R	Supervision and Review
SSTL	Site Specific Target Level
SWMU	Solid Waste Management Unit
TAGM	Technical Administrative Guidance Memorandum (NYSDEC)
TPH	Total Petroleum Hydrocarbons
USACE	United States Army Corps of Engineers
USAEC	United States Army Environmental Center
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VOC	Volatile Organic Compounds
WVA	Watervliet Arsenal

Installation Information

Installation Locale: Watervliet Arsenal (WVA) is located on approximately 140 acres of land in the City of Watervliet and the Town of Colonie, Albany County, New York. The City of Albany is approximately 3.5 miles south of WVA. To the east, WVA is separated from the Hudson by Route 32 (Broadway) and a six lane highway (I-787). To the west, WVA extends beyond the limits of the City of Watervliet into the Town of Colonie. Residential areas border WVA to the south and north.

Installation Mission: The Watervliet Arsenal Mission is to perform manufacturing (industrial) engineering, procurement, fabrication, and product assurance of assigned material, and to provide administrative and logistical support services to tenant activities. Assigned material includes mortars, recoil-less rifles, cannon for tanks, towed and self-propelled artillery and components of these items. Also included are: special tools, tool sets; test, measurement and diagnostic equipment; training equipment, devices and simulators relating to assigned material; and other equipment or material as assigned.

Lead Organization: US Army Operations Support Command

Lead Executing Agencies: US Army Corps of Engineers, Baltimore District; US Army Corps of Engineers, New York District

Regulatory Participation:
Federal: US Environmental Protection Agency, Region II
State: New York State Department of Environmental Conservation (NYSDEC) New York State Department of Health (NYSDOH)

National Priorities List (NPL) Status: Non-NPL; RCRA Consent Order with NYSDEC, May 1993; RCRA Consent Order with USEPA and NYSDEC, September 1993

***Installation Restoration Advisory Board (RAB)/Technical Review Committee (TRC)/Technical Assistance for Public Participation (TAPP)* STATUS:** A solicitation will follow the issuance of the Statement of Basis.

Installation Program Summaries:
IRP
Primary Contaminants of Concern: Groundwater, Soil
Affected Media of Concern: Chlorinated Solvents, POLs, PAHs, Heavy Metals
Estimated date for Remedy In-Place (RIP)/Response Complete (RC): 2005/2009
Funding to Date: (up to FY04): $20,451K
Current Year funding (FY06): $ 204K
Cost-to-Complete (FY07+): $1,458K

MMRP
WVA had one MMRP site, WVA-001-R-01, the Musket Testing Range, which was listed as RC in May 2003.

Cleanup Program Summary

Installation Historic Activity:

The WVA is a national registered historic landmark established in 1813 with the purchase of 12 acres of land. The principal mission during the early years of operation included the production of small arms ammunition, gun carriages, and leather goods. Since 1883, the facility has been producing cannons. Peak production periods were reached during World Wars I and II, and the Korean and Vietnam Wars.

Main Manufacturing Area: This area is RIP. Building 40 groundwater and indoor air remedies are in place, and Bldg. 25 HRC bioremediation is RC. Bldg. 25 groundwater MNA is in place. Area-wide LTM consisting of groundwater monitoring has been implemented.

Siberia Area: This area is RIP. Soil sampling in land-farming areas were completed in summer 2005. Area-wide LTM consisting of groundwater monitoring and cap maintenance has been implemented. Groundwater monitoring at the permeable iron reactive walls continues.

IRP:

Main Manufacturing Area

- Implemented Bldg. 40 corrective measures consisting of periodic sodium permanganate injections. Will complete second year of five year injection plan in FY06.
- Bldg 25 HRC groundwater remedy response complete. LTM for MNA remedy (RIP) will continue.
- Implemented Bldg. 40 indoor air remediation, which consists of indoor air-filtration through carbon. Response complete anticipated in FY06. Indoor air monitoring will continue.
- Complete indoor air and groundwater remedies at Bldg 40 and continue LTM. Statement of Basis expected in FY06.

Siberia Area

- Completed corrective measures for soil consisting of land-farming, excavation and disposal and asphalt capping. Response complete expected in FY06. LTM will continue
- Permeable iron reactive walls response complete expected in FY06. LTM will continue.
- Issue the Statement of Basis and LTM.

MMRP:

WVA had one MMRP site, WVA-001-R-01, the Musket Testing Range, which was listed as RC in May 2003.

WATERVLIET ARSENAL

Installation Restoration Program

IRP Summary

Total AEDB-R IRP Sites/AEDB-R sites with Response Complete: 31/30

Different Site Types:

1 Above Ground Storage Tank	2 Contaminated Buildings
3 Contaminated Groundwater	1 Dip Tank
1 Incinerator	2 Waste Treatment Plants
5 Industrial Discharges	1 Landfill
1 Maintenance Yard	2 Mixed Waste Areas
2 POL (Petroleum/Lubricants)Lines	5 Spill Site Areas
2 Storage Areas	1 Surface Impoundment/Lagoon
1 UST	1 Waste Lines

Most Widespread Contaminants of Concern: Petroleum/Oils/Lubricants, Halogenated Solvents, Heavy Metals

Media of Concern: Groundwater, Soil

Completed Removal (REM)/Interim Remedial Action (IRA)/Remedial Action (RA):
Surface Impoundment (WVA 26)
Soils Removals Oil Spill (WVA 01, 19)
Soils Removals Fuel Oil Spill (WVA 03)
USTs Removal (WVA 20)
Removals of PCB Contaminated-Soils (WVA 07)
Contamination Equipment Removal (WVA 11)
Industrial Sewers-Removal Portion Soluble Oil Line (WVA 24)
Implementation of Permeable Reactive Wall (GW) (WVA-25)
Product Recovery Pilot Test- PAHs in GW (WVA-27)
Contaminated Soils Removal (WVA 25, 28)
Burn Pit soil removal completed July 2000 (Siberia Area)
Siberia Area Soil Removal, Capping, and Soil Bioremediation (WVA 25 Siberia)

Total IRP Funding

Prior years (up through FY05):	$20,451K
Current year funding (FY06):	$ 204K
Future Requirements (FY07+):	$ 1,458K
Total:	$22,113K

Duration of IRP
Year of IRP Inception: 1979
Year of IRP RIP/RC: 2005/2009
Year of IRP Completion including Long-Term Management: 2018

IRP Contamination Assessment

IRP Contamination Assessment Overview

Contamination at the WVA has been identified in soil, sediment and groundwater. At the Siberia Area metals and chlorinated organic compounds have been detected in soil above guidelines in localized areas. Petroleum hydrocarbons (TPH and PAHs) are present above guidelines in soil throughout Siberia Area. WVA source of drinking water is city water, so there is no immediate threat to human health.

The Northeast Quadrant has a chlorinated VOC groundwater plume. Petroleum hydrocarbons are detected in groundwater throughout the Siberia Area. Hexavalent chromium contaminated groundwater is limited to a portion of the Northeast Quadrant. This contamination is attributable to Perfection Plating, an adjacent facility.

At the Main Manufacturing Area (MMA), contaminated soil above guidelines was not detected except for a limited area in the former Erie Canal (lead and PAHs). Groundwater in the MMA is contaminated with petroleum hydrocarbons (LNAPL) and chlorinated organics.

To simplify the investigation and remediation process, WVA has proposed that the IRP be managed as two operable units - Siberia and the Main Manufacturing Area. The distinction also addresses the contamination separately as chlorinated organics and petroleum hydrocarbons.

The Government Performance and Results Act (GPRA) established interim goals for the Resource Conservation and Recovery Act (RCRA) and the Comprehensive Emergency Response and Compensation Liability Act (CERCLA) programs. In RCRA, the GPRA goals are called Environmental Indicators (EIs). In RCRA, the GPRA goals are called CA 725, Human Exposures Controlled and CA 750, Groundwater Migration Controlled. The Watervliet Arsenal has been designated by RCRA as a GPRA baseline facility and is subject to the EI evaluations. Achieving the EIs by 2005 is a priority for RCRA.

A positive CA 725 will be achieved when the regulatory agencies determine that sufficient measures have been taken to control the risk of human exposure from contamination at the facility.

A positive CA 750 determination will be achieved when the regulatory agencies determine that contaminated groundwater above RCRA cleanup levels is no longer migrating beyond the facility boundary. It is important to remember that these GPRA goals are only an interim step and they do not represent the end of the corrective action process. Rather, EIs are a measure of near term success with the ultimate goal being to achieve a completed RCRA cleanup.

SIBERIA AREA (AEDB-R Site WVA-25)

The area known as Siberia Area is a 15-acre tract that was purchased by the Arsenal in May 1942. Located west of the Main Manufacturing Area, Siberia is used as a staging area for the interim storage of raw and hazardous materials, finished goods and supplies

for the WVA. Waste oil, semi-volatiles, chlorinated organics, and heavy metals have been identified as the contaminants in soil and groundwater across the Siberia Area. Sources of the petroleum hydrocarbon contamination are the result of past practices such as handling waste metal chips saturated with cutting oil, spreading spent oil on the ground surface for dust control, and the use of burn pits. All of these practices were considered "acceptable" and industry-standard at the time when they were performed. Volatile organic contamination in the northeast quadrant may have originated from the use of burn pits in this area.

MAIN MANUFACTURING AREA (AEDB-R Sites WVA-01 thru 22, 24, 26-33)
Subsurface contamination has been discovered in several locations in the Main Manufacturing Area. The major contaminants of concern are petroleum, oil, and lubricants (POLs) and chlorinated solvents. POL products have been and are currently used in machining operations. WVA also stores POL products for future use and stores waste oils for removal. Chlorinated solvents have been used in vapor degreasing and cleaning operations, but have not been used for this purpose at WVA since 1982.

In lieu of separate SWMU assessments, and considering the relatively small size of Watervliet Arsenal, a site-wide hydrogeologic RCRA Facility Investigation (RFI) was performed with regulatory approval.

The following is a description of the most noteworthy findings.
a) Groundwater - The results of the analytical data indicate that pesticides, metals, and semi-volatile organics are not contaminants of concern for the Main Manufacturing Area. Free-phase petroleum-derived product has been identified on the groundwater and within the bedrock fractures. Based on results of water level measurements, it appears that the source may be located upgradient of Bldg. 35, possibly associated with old spill events and leaking machining equipment foundations.

b) Soils Analytical data indicates that the soils in the Main Manufacturing Area have not been contaminated with pesticides or volatile organics (i.e., solvents) above current guidance values. Chromium was found around Bldg. 36 in the area of a reported chromium sludge spill, and lead was found in the former Erie Canal in front of Bldg. 25. Petroleum-derived product has been detected in the soils of the former Erie Canal in front of Bldgs 20 and 25. The area is covered with asphalt and therefore the contamination is not considered an immediate threat to human health or the environment.

Proposed Plan: In lieu of separate SWMU assessments, and considering the relatively small size of Watervliet Arsenal, a site-wide hydrogeologic Corrective Measures Study (CMS) is being performed. This will group all SWMUs at the Main Manufacturing Area into two operable units; chlorinated organic contamination and petroleum hydrocarbons. This will enable better IRP management, speed up the investigation and remediation, and therefore, reduce the overall IRP costs at Watervliet Arsenal. Both state and federal regulatory personnel have agreed to this approach. In a similar fashion as with the Siberia restoration process, the installation has submitted to the Regulating Agencies the

exposure scenarios and potential pathways document which will be used to aide in calculating the site specific target levels (SSTLs). The main focus of the CMS is to propose one remedial approach for the chlorinated organics contamination in groundwater and one remedial alternative for the petroleum hydrocarbons contamination, also in groundwater. The installation will not pursue restoration for soils in the Main Manufacturing Area. The calculation of action levels for soils should support this negotiable item.

IRP Cleanup Exit Strategy:

Main Manufacturing Area: Complete remedy at Bldg 40 and continue LTM.
Siberia Area: Issue the Statement of Basis and continue LTM. Complete LUCs.

Previous Studies

1986

- Preliminary Site Investigation, Siberia Area, C.T. Male Associates P.C., December (refer to WVA No. 25).
- Groundwater Monitoring Well Installations, Vicinity of Buildings 25 and 36, Empire Soils Investigations Inc., August

1987

- Subsurface Investigation (Pole Barn Vicinity), Groundwater Technology Inc., July (refer to WVA No. 25).

1988

- Environmental Site Assessment Report, Perfection Plating, C.T. Male Associates, P.C., November (off-site facility).

1990

- Subsurface Investigation Report for Former Vapor Degreaser Unit, Building 25, C.T. Male Associates, P.C.,1990 (refer to WVA No. 8)

1991

- Phase I RCRA Facility Investigation Report, Siberia Area, Environmental Science and Engineering Inc., Gainesville, FL, December (refer to WVA No. 25)
- Phase I Subsurface Contamination Investigation of the Chrome and Shrink Pit Areas In Buildings 35 and 135, Clough Harbour and Associates, January 1991 (refer to WVA No. 27)

1992

- Subsurface Investigation Report RCRA Surface Impoundment, Structure 39, Bed 1, C.T. Male Associates, P.C., revised January 7 (refer to WVA No. 26)
- Chromic Acid Line Repair, Huntingdon Empire Soils, Inc., June 1992 (refer to WVA No. 24)

1994

- Soil Characterization Study, Proposed Chip Handling Facility, Huntingdon Empire Soils, Inc., March
- Natural Gas Transmission Line Installation, Huntingdon Empire Soils, September

1996

- RFI, Draft Report, Siberia Area, Malcolm Pirnie, Inc., January
- RFI, Draft Final, Siberia Area, Malcolm Pirnie, Inc., August
- RFI, Preliminary Draft, Main Manufacturing Area, Malcolm Pirnie, Inc., December

1997

- RFI, Draft, Main Manufacturing Area, February
- RFI, Final, Siberia Area, Malcolm Pirnie Inc., December

Previous Studies

1999

- Bench-scale Aerobic Bioremediation Final Report, March
- RFI Draft Final, Siberia Area, Malcolm Pirnie, Inc., August

2000

- Final Approval on the RFI for Siberia Area, Malcolm Pirnie, Inc., September
- Burn Pit soil removal July
- Landfarming Pilot Treatment System started in July

2001

- Soluble Waste Oil Line Investigation Completed - No Further Action, November 2001
- Building #110 Tank Investigation Completed - No Further Action, November 2001
- LNAPL Recovery MMA-Pilot Completed (LTM) August 2001
- Data Gap Study for MMA at Building #40 Completed - Objectives Met, September
- Pilot Study for HRC Injections in front of Building #25, November
- Initiation of Biosparge and ORC pilot studies, October
- Iron Reactive Wall Monitoring, October
- Pilot Study for Chemical Oxidation Building #40, December

2002

- Full Scale ICM for Soil Bioremediation for Siberia, July
- ICM for Chemical Oxidation in front of Building #40, December

2003

- Corrective Measure Study - Siberia Area Completed, July

2004

- Decision Document for Siberia Area/awaiting signatures, March
- ICM for Chemical Oxidation Bldg #40 to Final Remedy, June
- Corrective Measures Workplan Bldg #40, July
- Corrective Measures Monitoring Program Bldg #40, August

2006

- Pilot Study Report for Building 25 HRC Injection, March
- Construction Certification Report, Siberia Area Corrective Measures, May

WATERVLIET ARSENAL

Installation Restoration Program

Site Descriptions

WVAA-25
SIBERIA (INCLUDES SWMUS #3, 18, 22-24)

SITE DESCRIPTION

The Siberia Area is a 15-acre storage plot, located to the west of the Main Manufacturing Area. The land was purchased in the 1940s. Raw material storage buildings and the DRMO salvage yard are located in this area. In addition, there is an on-site Chip Handling Facility and a Trash/Dumpster Area. The area is also the location for a newly replaced underground storage tank (1997; SWMU # 7a), an electrical substation and the site of an old Burn Pit (last used in the late 60s).

POL contaminated soil was discovered in the Southwest Quadrant during substation upgrade work. Sixty cy of soil were removed in December 1997. Soil from the Burn Pit was determined to be the source of VOC contamination. Approximately 1,600cy were removed in October 1999 and added to the landfarming operation.

A permeable reactive wall full-scale pilot system was installed in the Northeast Quadrant in December 1998 for the dehalogenation of chlorinated solvents in groundwater. This system has been effective and is being monitored with an upgradient and downgradient well system. Pilot Studies for ORC and Biosparging were initiated August 2001. They proved ineffective (November 2001). Bioremediation Landfarming was initiated in August 2000. Already, 14 of the 16 monitored contaminants are below TAGM. The USEPA and state have accepted the bioremediation pilot study results as being part of a viable final remedy. Also, agreement was reached on corrective action objectives. The Corrective Measure Study was approved in September 2003. The study recommends landfarming and excavation of soil, permeable iron reactive wall for groundwater, paving and seeding and long term monitoring. Soil excavation (18,500 cy) was initiated in October 2002 and completed in April 2003. Capping completed in July 2005. Landfarming completed in the first quarter of 2005. Grading, geo-textile and gravel placement completed in January 2005. Final confirmation sampling was completed in September 2005. Statement of Basis is expected in 2006.

STATUS

REGULATORY DRIVER: RCRA

RRSE: Medium

CONTAMINANTS OF CONCERN: POLs, PAHs, Heavy Metals, Chlorinated Solvents

MEDIA OF CONCERN: Soil, Groundwater

Phases	Start	End
RFA	197906	198708
CS	199409	199509
RFI/CMS	200206	200305
DES	200306	200307
IRA	199810	200312
CMI(C)	200205	200312
CMI(O)	200303	200406
LTM	200503	201809

RIP DATE: 200312
RC DATE: 200409

CLEANUP STRATEGY

LTM will continue.

WVAA-32
VAPOR DEGREASERS (BLDGS 20/110/120/130)

SITE DESCRIPTION

This AEDB-R site specifically addresses chlorinated solvent groundwater contamination from all vapor degreasers. Vapor degreasers were used to remove protective oil coatings from surfaces of metal parts. Vapors were exhausted to the outdoors through a vent. These vapor degreasers are no longer part of the manufacturing process and have been removed.

The RFI, accepted in January 2001, defined 5 distinct and separate sources of groundwater contamination; Building 25, Building 40, Buildings 20, 110, 121 North and South.

Groundwater sampling results indicated high concentrations of chlorinated VOCs in overburden and fractured bedrock. A DNAPL was detected at the downgradient installation boundary in deep fractured bedrock (MW 51). Soil sampling results did not indicate the presence of chlorinated VOCs above guidance values.

STATUS

REGULATORY DRIVER: RCRA

RRSE: High

CONTAMINANTS OF CONCERN:
Chlorinated Solvents

MEDIA OF CONCERN:
Groundwater

Phases	Start	End
RFA	197906	198708
CS	199409	199610
RFI/CMS	199610	200305
DES	200309	200312
IRA	200209	200409
CMI(C)	200209	200409
CMI(O)	200509	200910
LTM	200910	201809

RIP DATE: 200509
RC DATE: 200910

The CMS Data Gap Study, completed in June 2001, met the following objectives: contaminant distribution, fracture characterization, flowzone characterization, aquifer parameters, and hydraulic connection.

Pilot scale activities for VOCs at Building 40 (chemical oxidation) and 25 (enhanced natural attenuation) were completed in 2003.

An exposure assessment (included soil, surface water, groundwater and indoor air) was completed to evaluate the plume's risk to Human Health and the Environment. The assessment was revised and resubmitted in 2003. The exposure assessment concluded that there are no ecological risks. An indoor air exposure pathway has been identified.

WVAA-32
VAPOR DEGREASERS (BLDGS 20/110/120/130)

CLEANUP STRATEGY

At Bldg 40, the goal for chemical oxidation is to reduce source mass and mass flux from the boundary of the Arsenal, though MCLs will not likely be met. The expected period of performance is five years of injections, followed by five years of monitoring. Continue LTM for Bldg 25. At Bldg 40, an air filtration system will be installed. NFA is the proposed RA for the other three locations, since they are within the interior of the arsenal and do not seem to be migrating.

IRP No Further Action Sites Summary

AEDB-R #	Site Title	Documentation/Reason for NFA	NFA DATE
WVAA-01	BUILDING 121 OIL SPILL	Study completed, no cleanup required	200001
WVAA-02	CHROMIC ACID RINSE WATER SPILL NEAR BLDG. 36	Study completed, no cleanup required	200001
WVAA-03	BUILDING 136 (1976 SPILL DURING TRANS OPS)	All required cleanup completed	199610
WVAA-04	INDUSTRIAL WASTE TREATMENT PLANT AREA	Study completed, no cleanup required	200001
WVAA-05	CYANIDE TREATMENT PLANT BUILDING 110	Study completed, no cleanup required	200101
WVAA-06	METAL PLATING SHOP BLDG 14 DEMOLISH, 1981	Study completed, no cleanup required	200101
WVAA-07	BUILDING 20 MAJOR COMPONENTS	Study completed, no cleanup required	200001
WVAA-08	BLDG 25 VAPOR DEGREASER (MINOR COMP)	Study completed, no cleanup required	200001
WVAA-09	BUILDING 35 MEDIUM CALIBER GUN SHOP	Study completed, no cleanup required	200109
WVAA-10	BUILDING 110 BIG GUN SHOP	Study completed, no cleanup required	200001
WVAA-11	BUILDING 110 ANNEX		1996
WVAA-12	BUILDING 123 PAINT SHOP	Study completed, no cleanup required	200001
WVAA-13	BUILDING 125	Study completed, no cleanup required	200001
WVAA-14	BUILDING 135 PROCESS PIT	Study completed, no cleanup required	200001
WVAA-15	BUILDING 114 BENET LABS PILOT SCALE PLATING	Study completed, no cleanup required	200001
WVAA-16	BUILDING 115 BENET RESEARCH LABS	Study completed, no cleanup required	198708
WVAA-17	BUILDING 119 (DU MACHINING)	Study completed, no cleanup required	198708
WVAA-18	BUILDING 120 BENET RESEARCH LABS	Study completed, no cleanup required	200001
WVAA-20	UST LOCATIONS	All required cleanup completed	199712

AEDB-R #	Site Title	Documentation/Reason for NFA	NFA DATE
WVAA-21	AST LOCATIONS	Study completed, no cleanup required	198708
WVAA-22	ERIE CANAL SITE	Study completed, no cleanup required	200109
WVAA-23	SIBERIA AREA	All required cleanup completed	1997
WVAA-24	INDUSTRIAL WASTE SEWER LINES	Study completed, no cleanup required	200108
WVAA-26	BUILDING 36 SURFACE IMPOUNDMENT CLOSURE	All required cleanup completed	199405
WVAA-27	INVESTIGATE OIL CONTAMINATION IN MFG AREAS	Study completed, no cleanup required	200109
WVAA-28	FORMER CHIP HANDLING AREA, BLD 132 SOUTH	Study completed, no cleanup required	200001
WVAA-29	RCRA CONTAINER STORAGE FACILITY BLD 145	All required cleanup completed	199704
WVAA-30	OUTFALL TO HUDSON RIVER (OUTFALL 03)	Study completed, no cleanup required	200001
WVAA-31	INCINERATOR (INACTIVE)	Study completed, no cleanup required	200001
WVAA-33	CHROME PLATING SUMPS (BLDG 35)	Study completed, no cleanup required	200001

IRP Schedule

Initiation of IRP: 1979

Past Phase Completion Milestones

The environmental investigations and assessments at WVA have been performed under RCRA. CERCLA terminology was used in several early documents at WVA, therefore RCRA terms are used interchangeably with CERCLA terms. A RCRA 3008(h) order with the New York State Department of Environmental Conservation (NYSDEC) and USEPA Region II, became effective on 12 October 1993.

1979

- Initial Installation Assessment

1986

- Installation Assessment Update

1996

- RFI WVA 25 Siberia Area RCRA Facility Investigation. Site investigations conducted in December 1986 and July 1987. RFI Phase I & Phase II completed

1997

- Final RFI WVA 25 Siberia Area RCRA Facility Investigation completed in December
- A RCRA Facility Investigation (RFI) was completed for the Siberia Area in December, 1997. Task was completed on schedule.

1998

- A Soil Removal Action (Interim Remedial Action) was taken in January 1998. A total of 60 cubic yards of potentially contaminated soils were taken from the Main Substation Area at Siberia
- Additional investigatory work was performed to supplement the Corrective Measures Study for the Siberia Area in August 1998. Task was completed ahead of schedule
- Phase II of the RFI (DNAPL investigation) was completed for the MMA in August 1998 CMS Design Reactive Wall Pilot System. June 1998-Dec 1998
- CMI Groundwater, Reactive Wall Pilot Study. June 1998 - December 1998

1999

- A bench-scale Aerobic Bioremediation Study for the Treatability of PAHs and TPHs was completed in August 1998. A report was submitted to the Regulators and final approval was obtained in January 1999; part of the CMS
- The installation of Reactive Permeable Walls Pilot System for the in situ passive treatment of chlorinated solvents in the Siberia Area was completed in December 1998. Monitoring of the system, June
- A RCRA Facility Investigation (RFI) was completed for the MMA in December 1999

IRP Schedule

2000

- WVA-32, Soluble Waste Oil Line Closure Report, June
- Geophysical fracture delineation of Building 40 Area. October 2000 - September 2001
- Landfarming Pilot Treatment System started in July 2000 - August 2002
- CMS Bench-Scale Pilot Study (soils). Began 1997- Dec
- IRA Soils Removal (Burn Pit). Jan 2000 - June

2001

- Pilot Study - ORC/Biosparge Siberia Area. May 2001

2002

- Pilot Study- Landfarming bioremediation. August 2000 - September 2002
- Pilot Study - Chemical Oxidation Building 40 Area. February 2002 - 2004
- Pilot Study - HRC injection for Building 25 Area. February 2002 – March 2006
- Corrective Measures – Siberia Area. September 2002 – September 2005

2002

- Corrective Measures – MMA Bldg. 40. September 2004 – ongoing

Projected Record of Decision (ROD)/Decision Document (DD) Approval Dates: 2009

Schedule for Next Five-Year Review: Unknown

Estimated Completion Date of IRP (including LTM phase): 2018

WATERVLIET ARSENAL IRP SCHEDULE

(Based on current funding constraints)

AEDB-R#	PHASE	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15+
WVAA-25	LTM									201809
WVAA-32	CMI(O)									
	LTM									201809

Prior Years Funds
Total Funding up to FY04: $19,812K

Year	Site Information	Expenditures	FY Total
FY05	LTM - WVAA-25	$411	
	CMI(O) - WVAA-32	$228	**$639K**

Total Prior Year Funds: **$20,451K**

Current Year Requirements

Year	Site Information	Expenditures	FY Total
FY06	LTM – WVAA-25	$25K	
	CMI(O) – WVAA-32	$179K	**$204K**

Total Funding FY06: $204K

Total Future Requirements: **$1,458K**

Total IR Program Cost *(from inception to completion of the IRP):* **$22,113K**

Community Involvement

The Army strongly encourages local community involvement during investigations and cleanup actions at all Army sites. In the past, Watervliet Arsenal (WVA) has conducted interviews with Watervliet citizens and local officials to integrate community issues and concerns to ongoing site investigations, engineering designs, and proposed construction activities. As a result of an interview process conducted in August 1992, it was determined that there was no community interest in formal involvement in restoration activities. The result of this interview process was documented in the WVA Community Relations Plan, dated 19 October 1992.

Since then, the following are the community outreach activities performed by the Watervliet Arsenal in their attempt to gather feedback from the community in regard to their restoration efforts.

In April 1998, Watervliet Arsenal submitted an update to the 1992 Community Relations Plan to the Regulators. The CRP was updated with the following objectives:

1. Meet the requirements set forth in the Administrative Order on Consent Docket No. II RCRA-3008(h)-93-0210,
2. Include chronological summaries of environmental investigations conducted at the Arsenal since 1990,
3. Integrate community issues and concerns from Watervliet citizens and local officials, and
4. Prepare a site-specific program to establish communication and information exchange regarding restoration efforts between Army staff, the civilian workforce, community agencies, and the public.

A Statement for Basis from regulators was written for Siberia Area and will be out for public comment by September 2006. A public meeting for the release of Statement of Basis is anticipated.